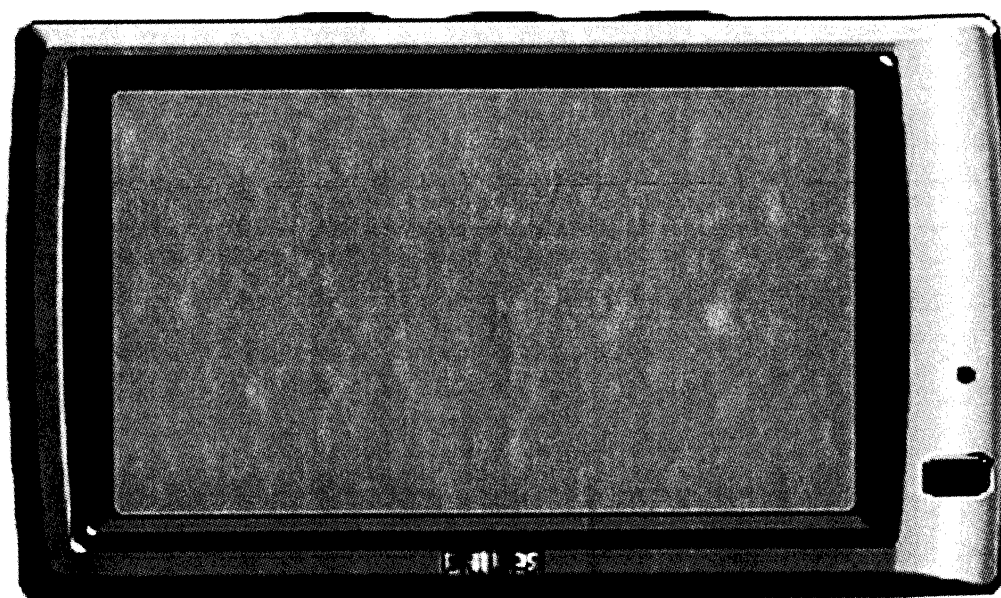


22SY409/00

22SY409/17

Service Manual

12 V 



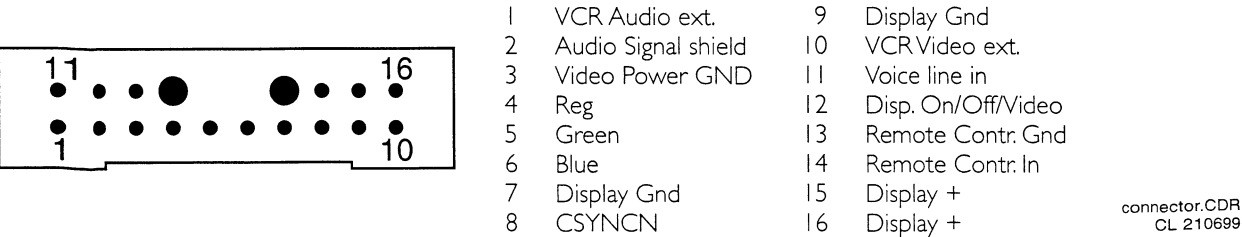
Contents

Specification, Connector block	Page 2
Monitor control keys	Page 3
Disassembling housing	Page 4
Disassembling chassis	Page 5
Exploded View	Page 6
Adapter cable	Page 7
Alignments	Page 8, 9
Sensor PWB	Page 10
Circuit diagram	Page 11
Main PWB A-side, PAL version	Page 12
Main PWB B-side, PAL version	Page 13
Main PWB A-side, NTSC version	Page 14
Main PWB B-side, NTSC version	Page 15
IC's and measurements	Page 16, 17, 18, 19, 20
Partlist	Page 21, onwards

Specifications

Power supply	9 - 16 V
Current consumption	max. 1 A
Operating temperature	-20 to +70° C
Display control signal (pin 12)	open input: display OFF 0 - 2.5 V: display ON, navigation video mode > 3.5 V display ON, VCR video mode
Navigation video	f = 60 Hz RGB lines with 75 Ohm input resistor and nom. +0.7 V _{pp} negative CSYNC=CSYNCN (TTL-level) impulse
VCR video	CVBS video input with 75 Ohm input resistor and nom. +0.7 V _{pp} for the picture information and -0.3 V _{pp} for the CSYNCN information
VCR input jack	3.5 mm female mini jag front = video mid = audio back= GND
IR receiver output	low level: < 0.5 V high level: > 2.5 V
Pixel error limitation	max. 4 (R+G+B) for display ON, no neighbours, no flickering max. 8 (R+G+B) for display OFF, no neighbours, no flickering
Audio bandwidth	300 - 8000Hz

Connector block



Monitor control keys



menu.CDR
CL 210699

For more detailed information refer to the Directions for use.

NAVIGATION MENU

- Volume
- Brightness
- Display mode

VIDEO MENU

- Volume
- Brightness
- Colour
- Contrast (for RGB), Tint (for NTSC)
- Display mode

SETUP MENU

- Brightness control
- Mounting position
- Loudspeaker

Menu button: Switches mode dependend menu on, selects menu item, switches menu off.
Menus are switched off automatically within 5 sec. (3 sec. for setup menu) if no key is pressed.

- button: Decreases the value of selected item resp. toggles between the possible settings.

+ button: Increases the value of selected item resp. toggles between the possible settings.

NAVIGATION MODE MENU

Volume: If last setting is between step 31 and step 15, system will start with default setting15.
If last setting is between step 0 and step 15 the setting remains at system start.

Step	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16.....29	30	31
Volume [dB]	-80	-60	-55	-50	-45	-40	-35	-30	-28	-26	-24	-22	-20	-18	-16	-15	steps of one	0	MUTE

Volume can be adjusted without entering the OSD menu before:
Press the + or - keys, volume menu appears automatically.

Brightness: Depending on the ambient light 'Brightness Day' or 'Brightness Night' appears and can be adjusted.

Display Mode: Normal (4:3) or Full Screen (16:9) display can be selected.

VIDEO MODE MENU

Volume: Same as in Navigation mode menu.

Brightness: Same as in Navigation mode menu.

Colour: Intensity of colour adjustable.

Contrast/Tint: PAL version 22SY409/00, 'Contrast' appears for adjustment.
NTSC version 22SY409/17, 'Tint' appears for adjustment.

Display Mode: 5 different display modes can be selected: Normal, Full screen, Cinema, Wide 1, Wide 2.

SETUP MENU (push all three keys simultaneously to enter)

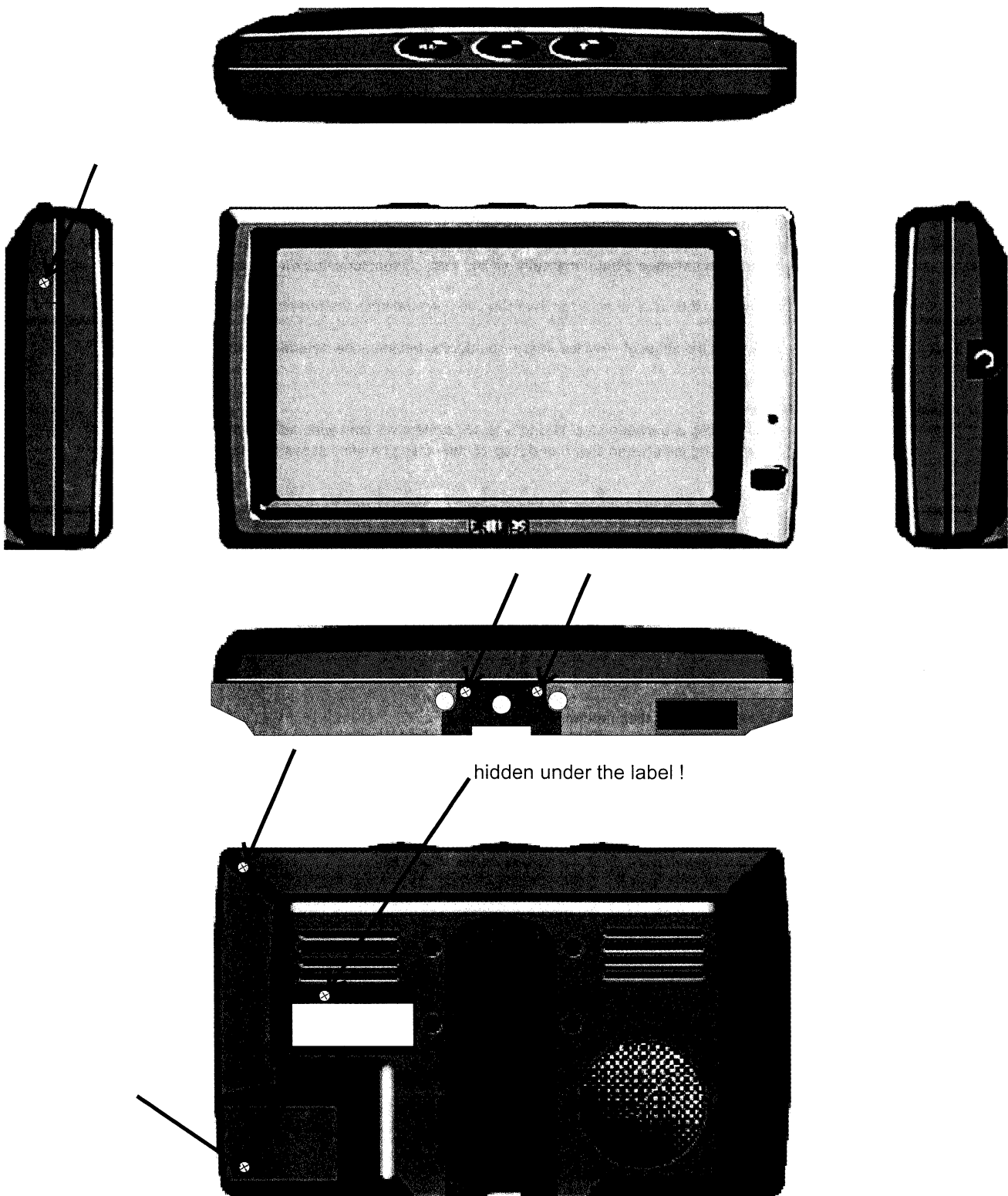
Brightness control: In Auto mode the ambient light conditions are considered for brightness adjustment.
In Auto Off mode brightness adjustment covers the full brightness range.

Mounting Position: Low or High. Brightness adjustment behaves different dependend on the selected mode (other step sizes, other levels).

Loudspeaker: Switch internal Loudspeaker ON or OFF. If switched OFF it will automatically switched ON again when Volume menu is selected.

Disassembly of housing

Remove the screws indicated by an arrow.



Disassembly of chassis

Removing the LCD panel:

- Take out flex foil from CP4 (ZIF connector)
- Take out connector from CP6
- Desolder black grounding lead

Removing the sensor print:

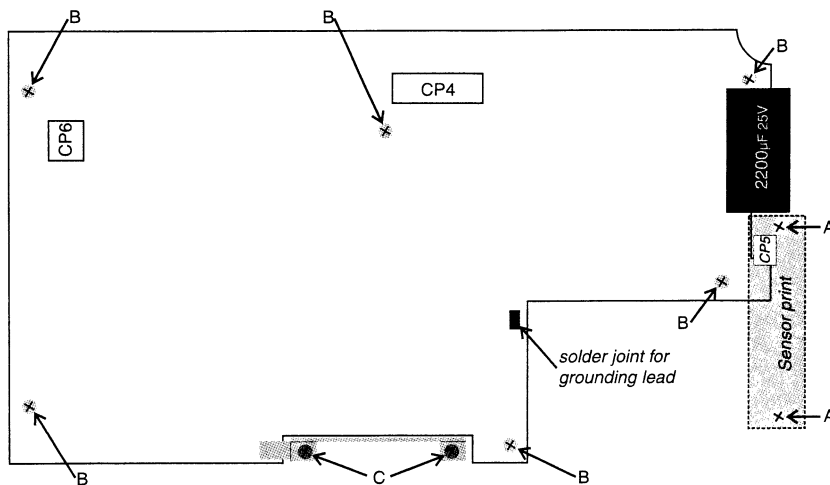
- Take out 4-fold connector from CP5
- Remove screws 'A'

Removing the LCD panel:

- Remove screws 'B' and 'C'
- Sever the glued 2200 μ F capacitor from the back cover

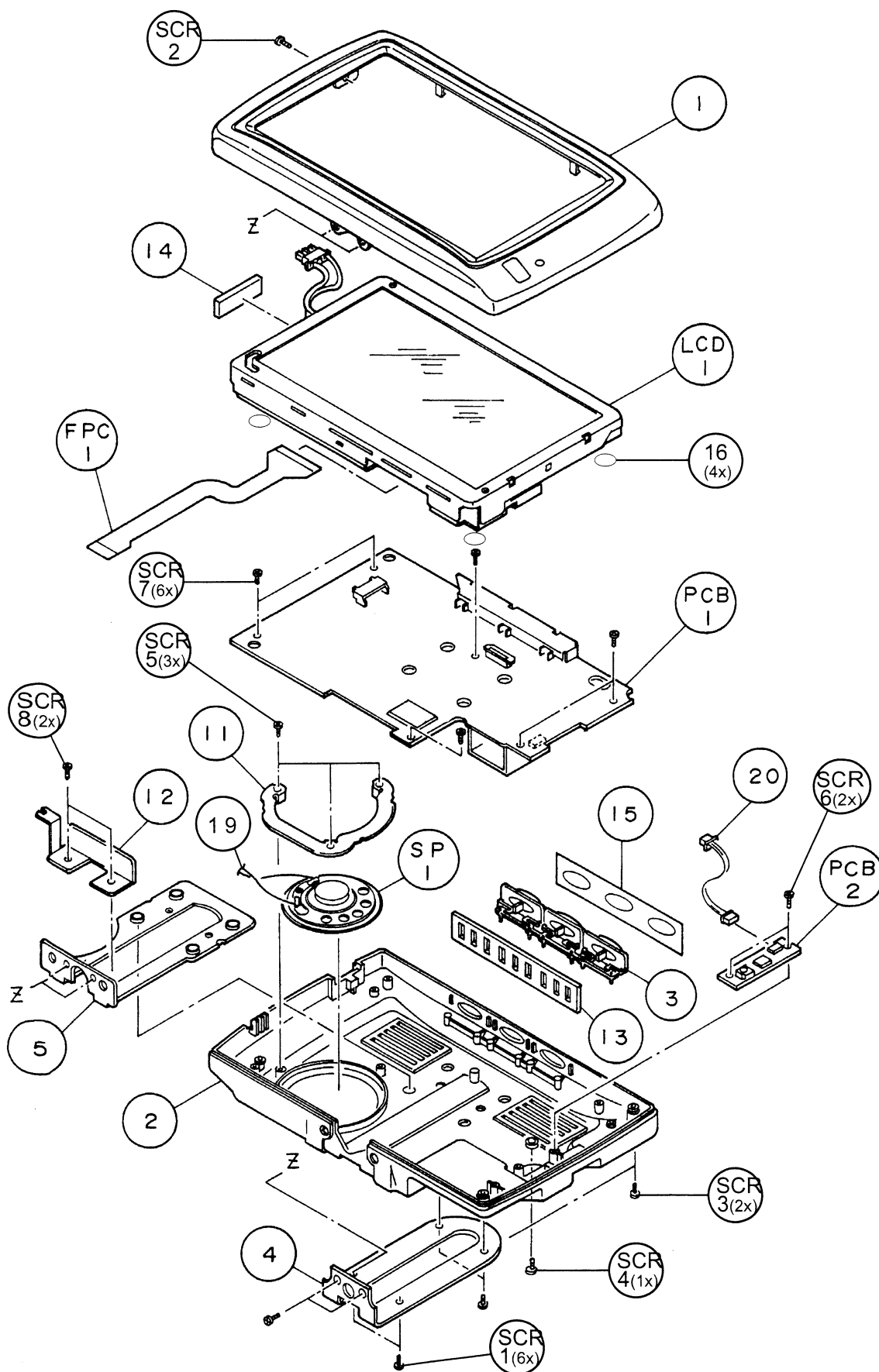
Removing the LCD panel:

- Fix the 2200 μ F capacitor with glue to the back cover
- Take care about correct position of the foam stripe below the knobs



ATTENTION
Static Sensitive Devices
Handle Only at Static
Safe Work Stations

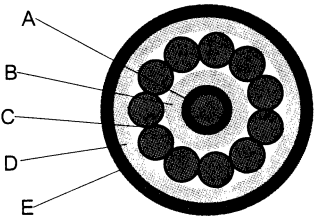
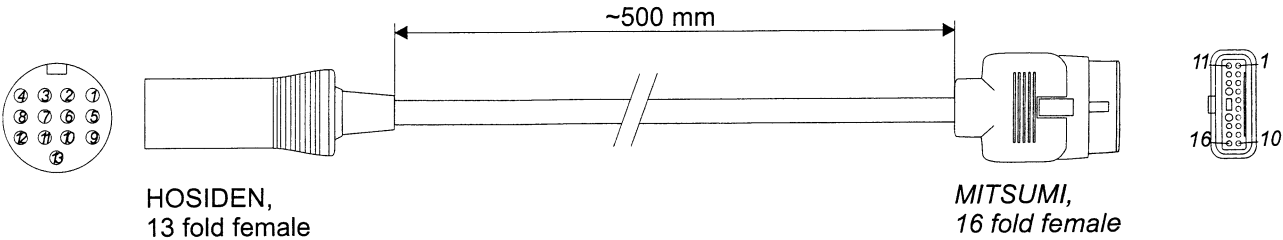
Exploded view



Adapter cable

In case a 4:3 monitor (22SY402) should be replaced by the 16:9 monitor (22SY409) use the adapter cable described below.

Service code number: 3112 310 26291



A= grey 0,22 mm ²
 B= inner shield
 C= 11 x 0,22 mm ²; colours: light blue,dark green,black,violet, dark blue,
 white, pink, red, light green, orange, yellow.
 D= outer shield
 E= Cover black PVC

Hosiden	Mitsumi	Colour	Function
Pin 1	Pin 12	white	Display mode ON/OFF/VIDEO
Pin 2	Pin 14	light blue	Remote signal
Pin 3	Pin 5	dark green	Video GREEN
Pin 4	Pin 6	dark blue	Video BLUE
Pin 5	Pin 2	inner (grey) shield	Line out -
Pin 6	Pin 8	violett	Video CSYNC
Pin 7	Pin 4	light green	Video RED
Pin 8	Pin 7	black	Video GND
Pin 9	Pin 11	grey	Line out +
Pin 10	Pin 15	red	Display power +
Pin 11	Pin 16	orange	Display power +
Pin 12	Pin 10	yellow	Ext. Video
Pin 13	Pin -	pink	Brightness control
Shield	Pin 1	outer shield	Audio GND
Shield	Pin 3	outer shield	Video GND
Shield	Pin 9	outer shield	Display GND
Shield	Pin 13	outer shield	Remote GND
Shield	Shield	outer shield	Display housing GND

Alignments

Conditions:

Connect Navigation computer (22SY596) to monitor.
Adjust supply voltage to +14 V.
Connect PAL generator (for version /00) respectively NTSC generator (for version /17) to AV jack.
Set PAL resp. NTSC composite signal to video black and white 5 - step wave form, 0.7 V_{pp}.

1. Video Alignment

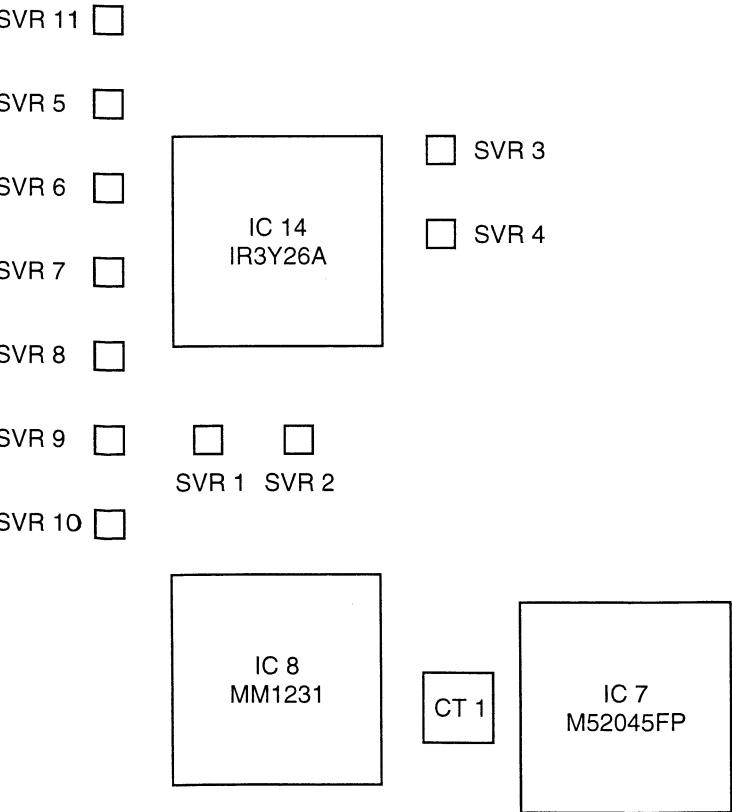
Connect 10 K resistor between IC7, pin 22 and GND.
Connect frequency counter parallel to the 10 K resistor.
Connect collector of Q29 to +5.0 V (DC).
Set NTSC generator to NO SIGNAL.
- Align CT1 for frequency 4.433619 MHz +/- 100 Hz for PAL version.
 3.579545 MHz +/- 100 Hz for NTSC version.

2. Pre-alignment for the LCD module

Align:	Poti	Value	Point of measurement
	SVR 2	1.64 V	IC14, pin 5
	SVR 3	1.35 V	IC14, pin 27
	SVR 4	2.75 V	IC14, pin 26
	SVR 5	2.18 V	IC14, pin 38
	SVR 6	2.41 V	IC14, pin 39
	SVR 7	2.12 V	IC14, pin 40
	SVR 8	2.08 V	IC14, pin 41
	SVR 9	2.47 V	IC14, pin 42
	SVR10	2.38 V	IC14, pin 43
	SVR11	1.98 V	CP 4, pin 13

Voltages are DC to GND with a tolerance of +/- 0.02 V

Locations:



locations.CDR
CL 210699

3. LCD alignment

Set brightness control to AUTO OFF (see monitor control keys - setup menu).

Connect oscilloscope to GREEN (CP4, pin 17)

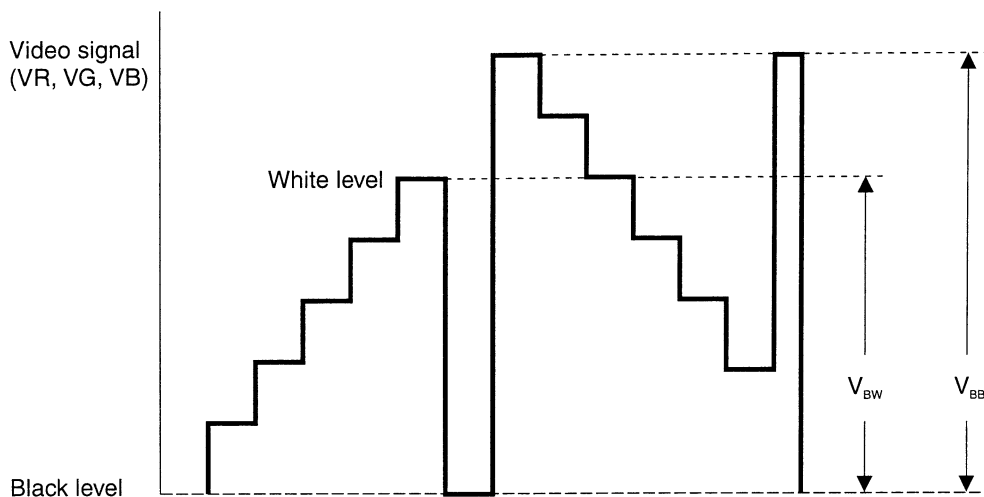
RGB AMP:	Align SVR 7 for black to black level (V_{BB})	4.0 V _{pp} +/- 0.1 V (AC)
CONTRAST:	Align SVR 2 for black to white level (V_{BW})	3.8 V _{pp} +/- 0.1 V (AC)

Connect oscilloscope to RED (CP4, pin 18)

SUB BRIGHT:	Align SVR 6 for black to black level (V_{BB})	4.0 V _{pp} +/- 0.1 V (AC)
CONTRAST R:	Align SVR10 for black to white level (V_{BW})	3.8 V _{pp} +/- 0.1 V (AC)

Connect oscilloscope to BLUE (CP4, pin 19)

SUB BRIGHT:	Align SVR 5 for black to black level (V_{BB})	4.0 V _{pp} +/- 0.1 V (AC)
SUB CONTRAST B:	Align SVR 9 for black to white level (V_{BW})	3.8 V _{pp} +/- 0.1 V (AC)

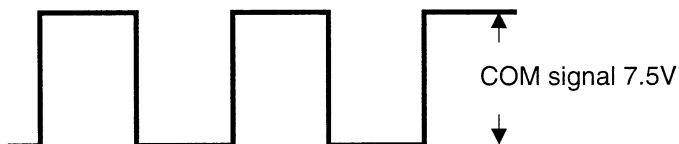


videosisg.CDR
CL 210699

Brightness alignment:

Set mode to VIDEO.

- Align SVR 1 for COM signal at CP4, pin 13 7.5 V_{pp} +/- 0.2 V (AC).



comsig.CDR
CL 210699

Horizontal position alignment:

Set display mode to FULL SCREEN (see monitor control keys - video mode menu).

Set video generator to TEST PATTERN.

- Align 'H-POS' at the backside of the LCD panel until picture is in the center of the LCD.

H-SYNC frequency alignment:

Connect frequency counter between CP4, pin 1 and GND.

Set video generator to NO SIGNAL.

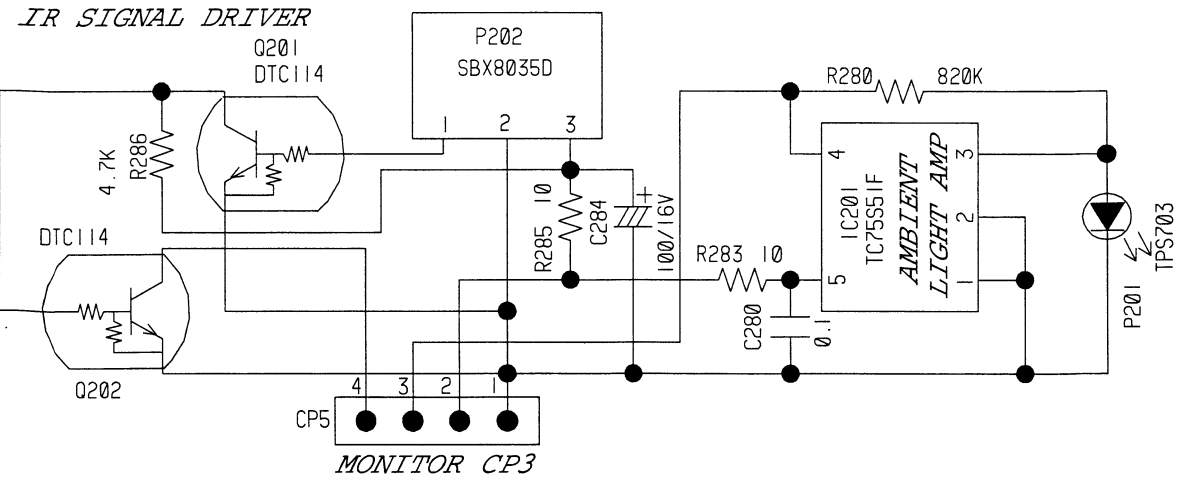
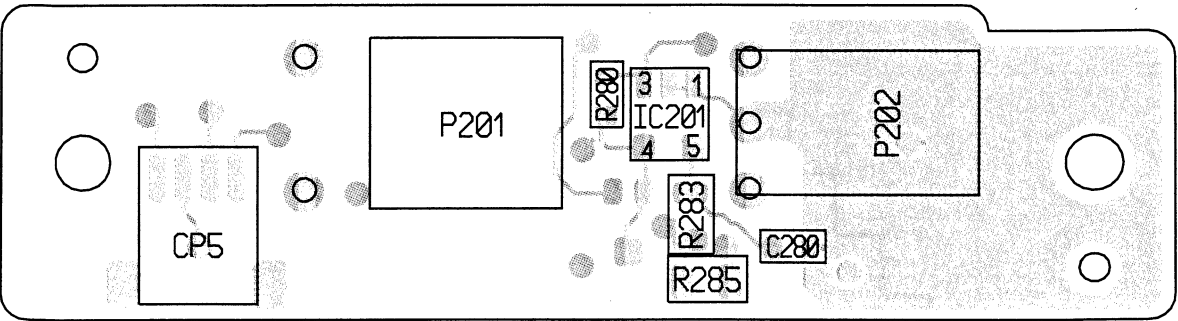
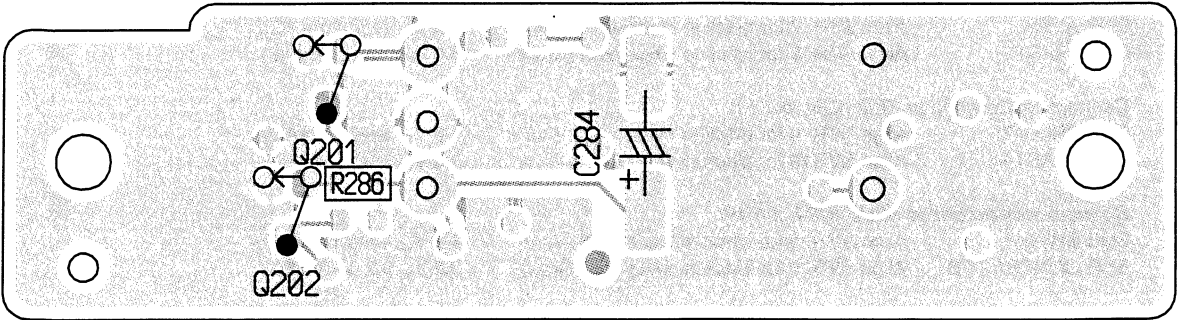
- Align 'VCO' at the backside of the LCD panel for frequency 15.73 KHz +/- 0.03 KHz.

Check:

The ready aligned monitor should be compared with a reference set.

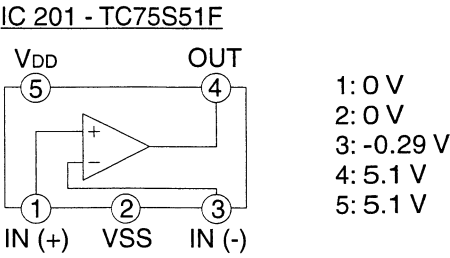
In case of differences in color, tint and brightness align SVR3 again slightly.

Sensor PWB

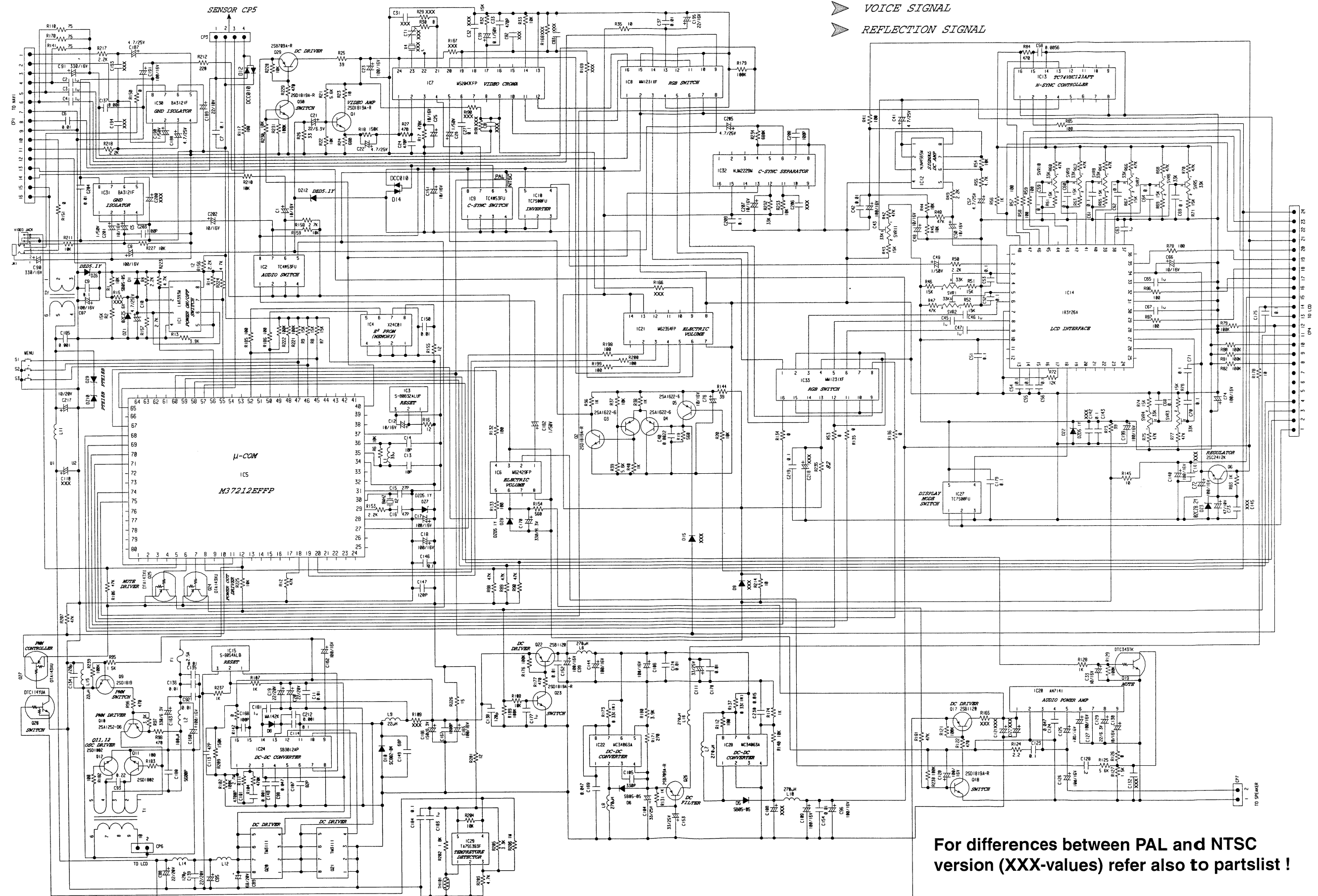


Q201- DTC114
B: 1.9 V
C: 0 V
E: 0 V

Q202- DTC114
B: 0 V
C: 4.2 V
E: 0 V

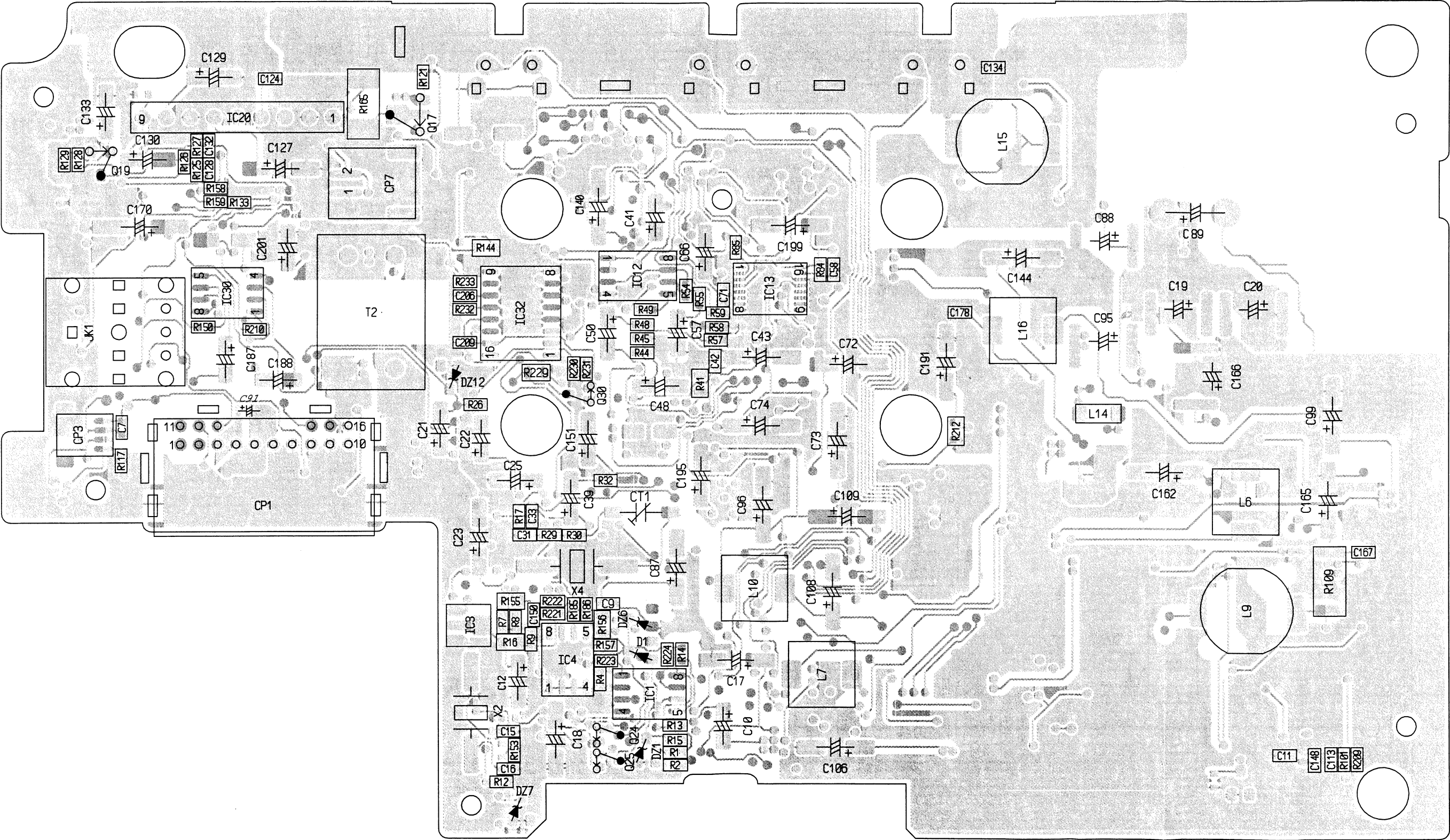


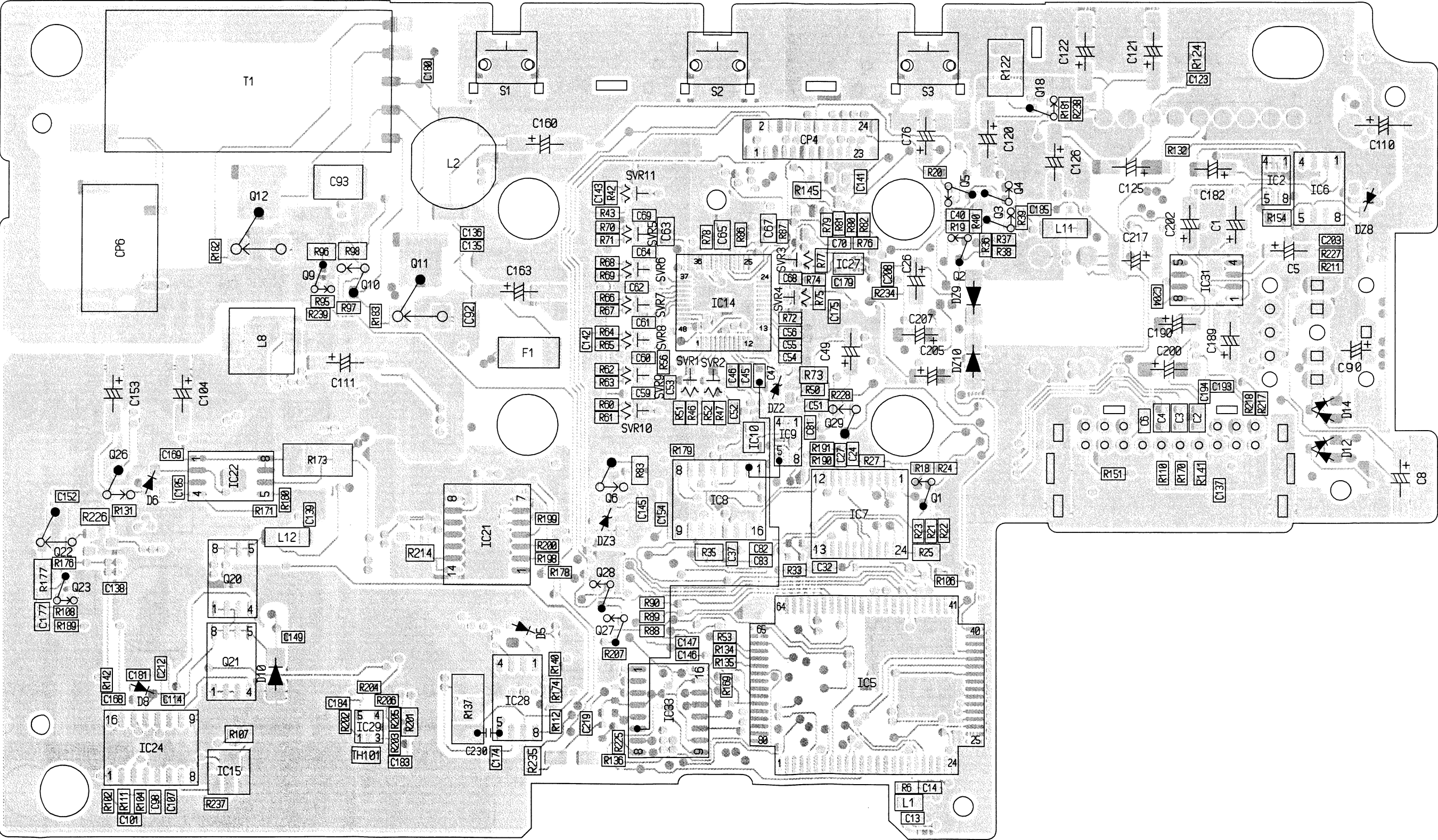
Circuit diagram

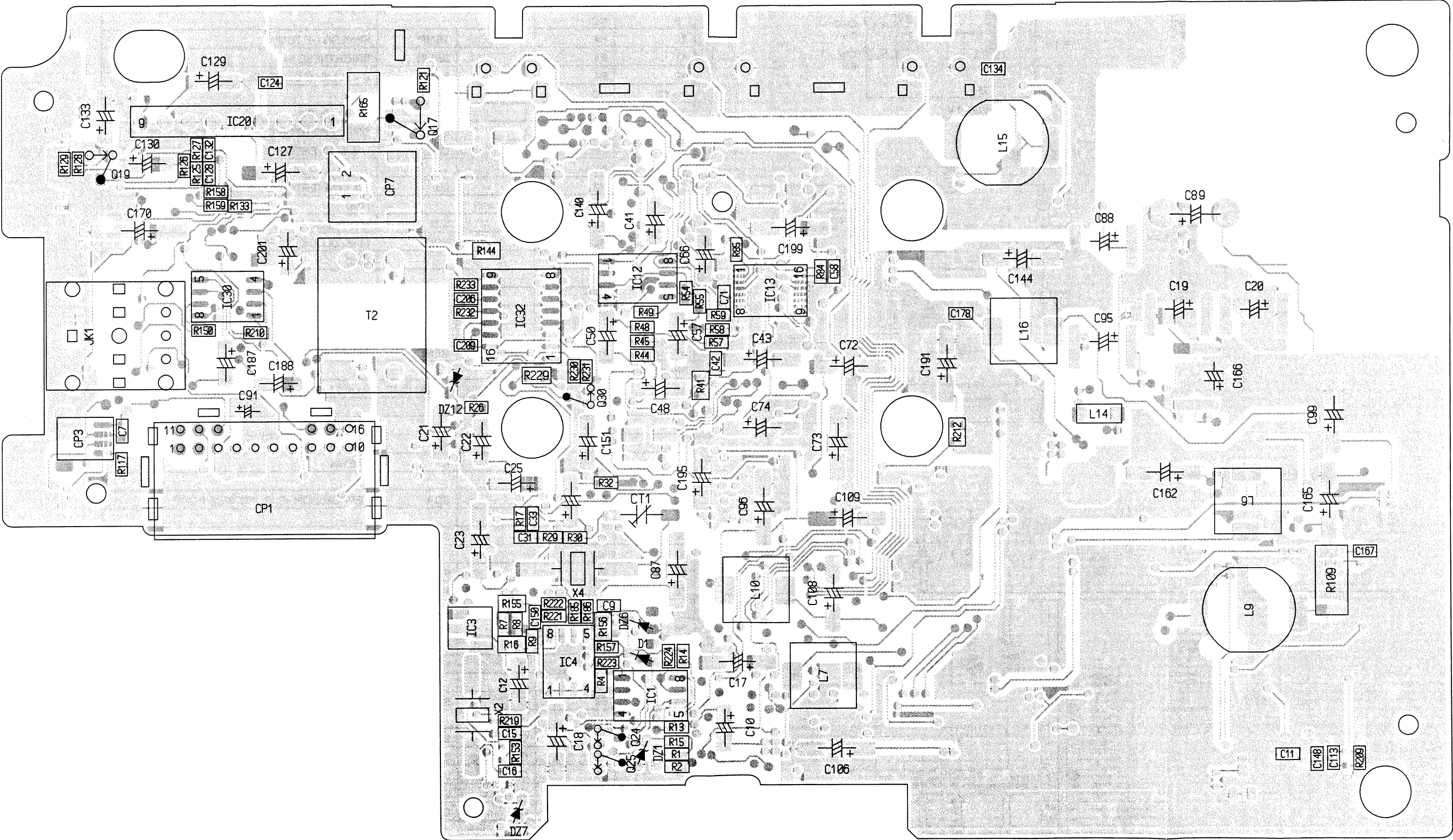


For differences between PAL and NTSC version (XXX-values) refer also to partslist !



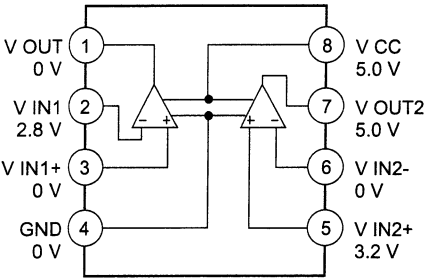




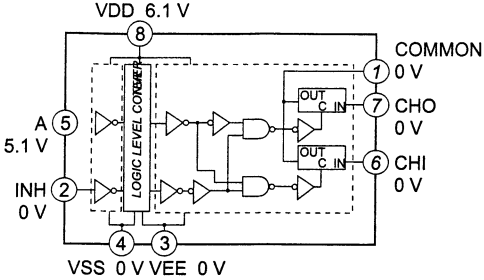


Values are DC to GND, while monitor is in navigation mode

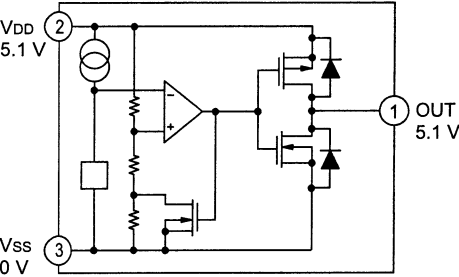
IC 01 - LA6393M



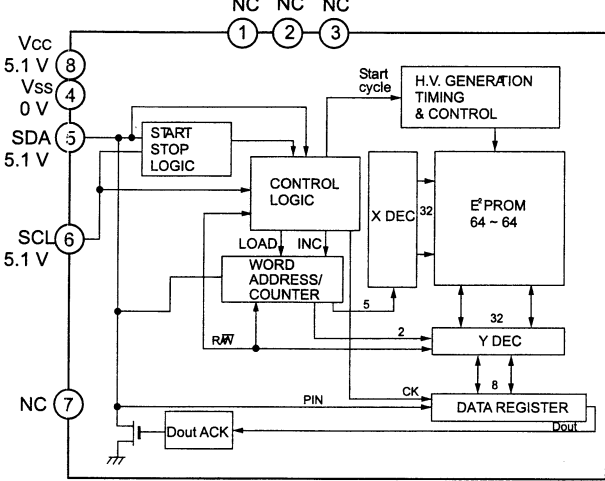
IC 02 - TC4W53FU



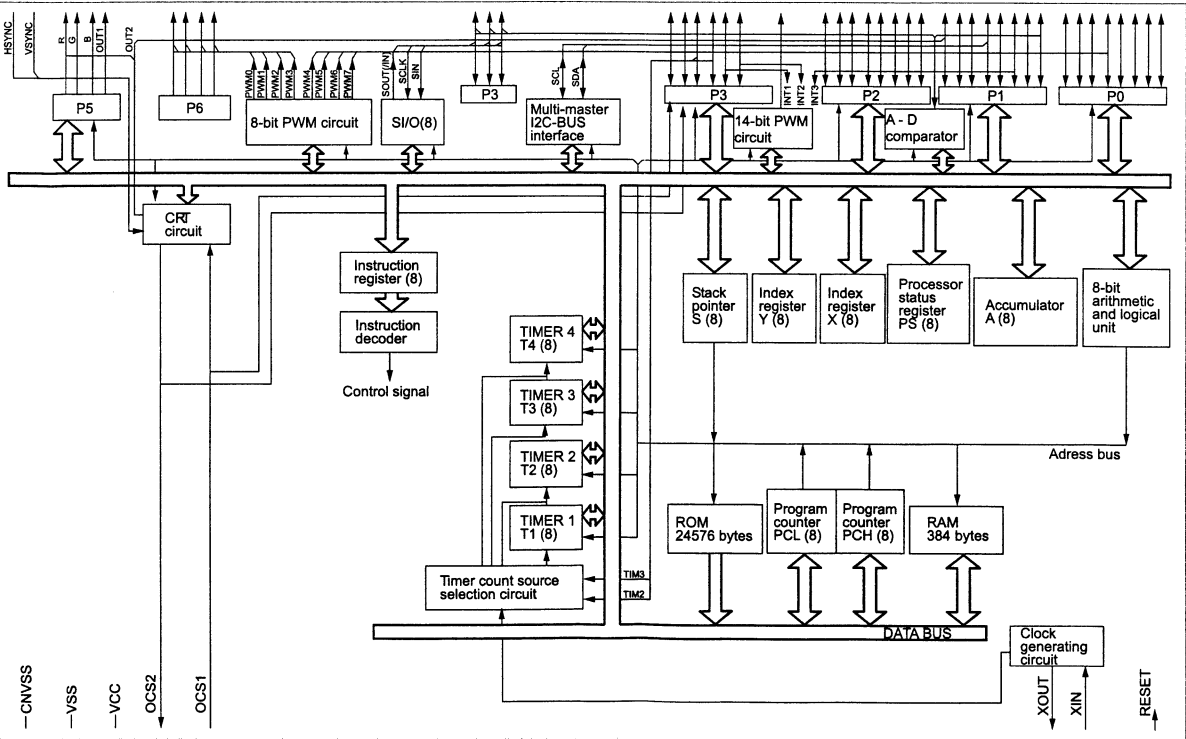
IC 03 - S-80832ALUP



IC 04 - X24C01S

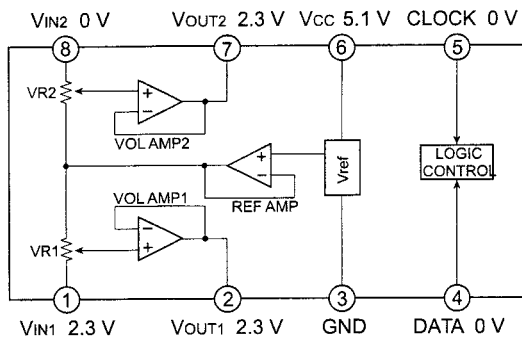


IC 05 - M37212EFPF (for pinning see next page)

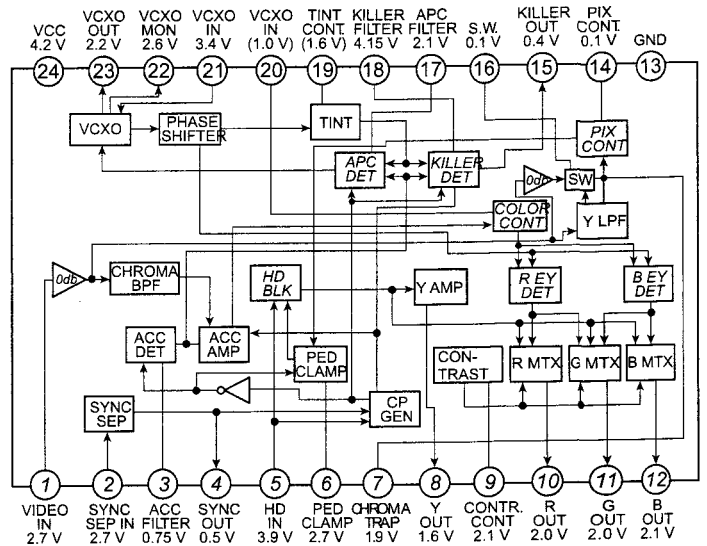


PIN	PORT	I/O	SIGNAL	DESCRIPTION
1-4	NC			
5	P0	I	VIDEO	VIDEO IN
6	P0	O	NAVI	NAVI/VIDEO
7	P0	O	PWR4	POWER ON/OFF
8	P0	O	MODS	LCD DISPLAY MODE
9	NC			
10	P4	I	TEMP	SENSOR OF TEMP
11	P4	I	BRI IN	BRIGHTNESS IN
12	P4	O	B-OUT	BACK LIGHT CONTROL
13-17	NC			
18	P2	I		INITIAL PORT
19	P2	I	DI	DIA CONVERTOR CORRESPONDENCE PORT
20	P2	I	CLK	DIA CONVERTOR CORRESPONDENCE PORT
21-26	NC			
27	P2	O	LD	D/A CONVERTOR CORRESPONDENCE PORT
28	CNVSS			GND
29	XIN	I	XIN	MAIN CLOCK INPUT
30	XOUT	O	XOUT	MAIN CLOCK OUTPUT
31	VSS			GND
32-33	NC			
34	VCC		VCC	5V +/- 10%
35	P3	O	OSC2	OSCILATOR OUT FOR OSD
36	P3	I	OSC1	OSCILATOR OUT FOR OSD
37	RESET	I	RESET	RESET INPUT
38-39	NC			
40	P3	I	VIDEO OUT	VIDEO MODE OUTPUT
41-44	NC			
45	P1	I	K1	MENU KEY IN
46	P1	I	K2	+ KEY IN
47	P1	I	K3	- KEYIN
48-49	NC			
50	P1		SDA	EEPROM CORRESPONDENCE PORT
51	NC			
52	P1		SCL	EEPROM CORRESPONDENCE PORT
53-54	NC			
55	P0	I	PWR 2	NAVI/VIDEO/PWR OFF
56	P0	I	PWR 1	NAVI/VIDEO/PWR OFF
57	P0	O	MODN	LCD DISPLAY MODE
58	P0	O	MODW	LCD DISPLAY MODE
59	P2	O	MUTE	MUTE OUTPUT FOR AUDIO
60	P2	O	MOD-L	LCD PAL/NTSC SWITCH
61-64	NC			
65	P2	O	SOUT	ELECTRIC VOL. CORRESPONDENCE PORT
66	NC			
67	P2	O	SCLK	ELECTRIC VOL. CORRESPONDENCE PORT
68	P5	O	BLK	OSD BLACKING OUT
69	P5	O	B	OSD BLUE OUTPUT
70	P5	O	G	OSD GREEN OUTPUT
71	P6	O	R	OSD RED OUTPUT
72-73	NC			
74	HSYNC	I	HSYNC	H-SYNC INPUT
75	VSNC	I	VSNC	V-SYNC INPUT
76-80	NC			

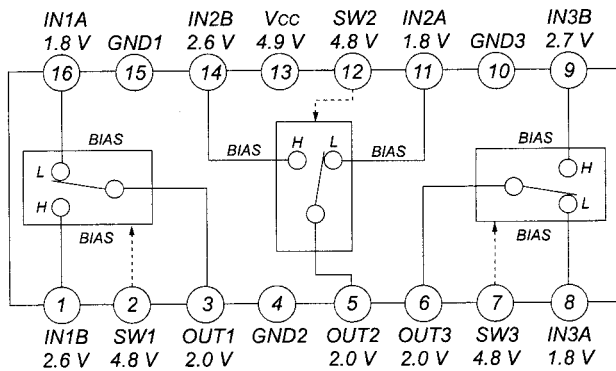
IC 06 - M62429FP



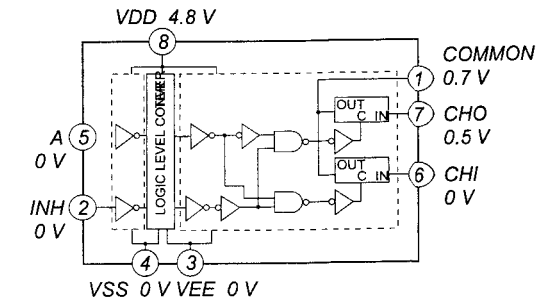
IC 07 - M52045FP-601



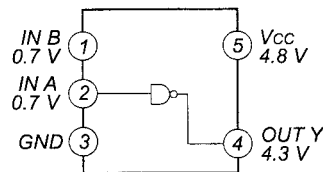
IC 08 - MM1231



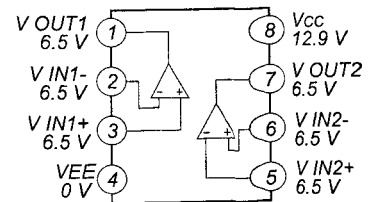
IC 09 - TC4W53FU



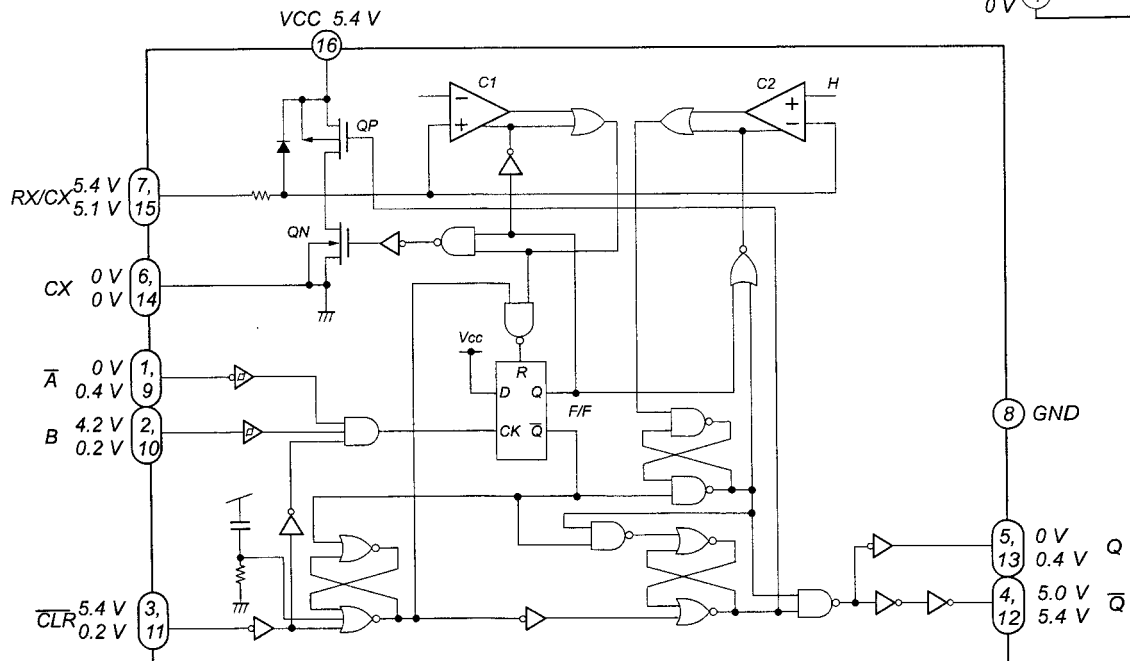
IC 10 - TC7S00FU



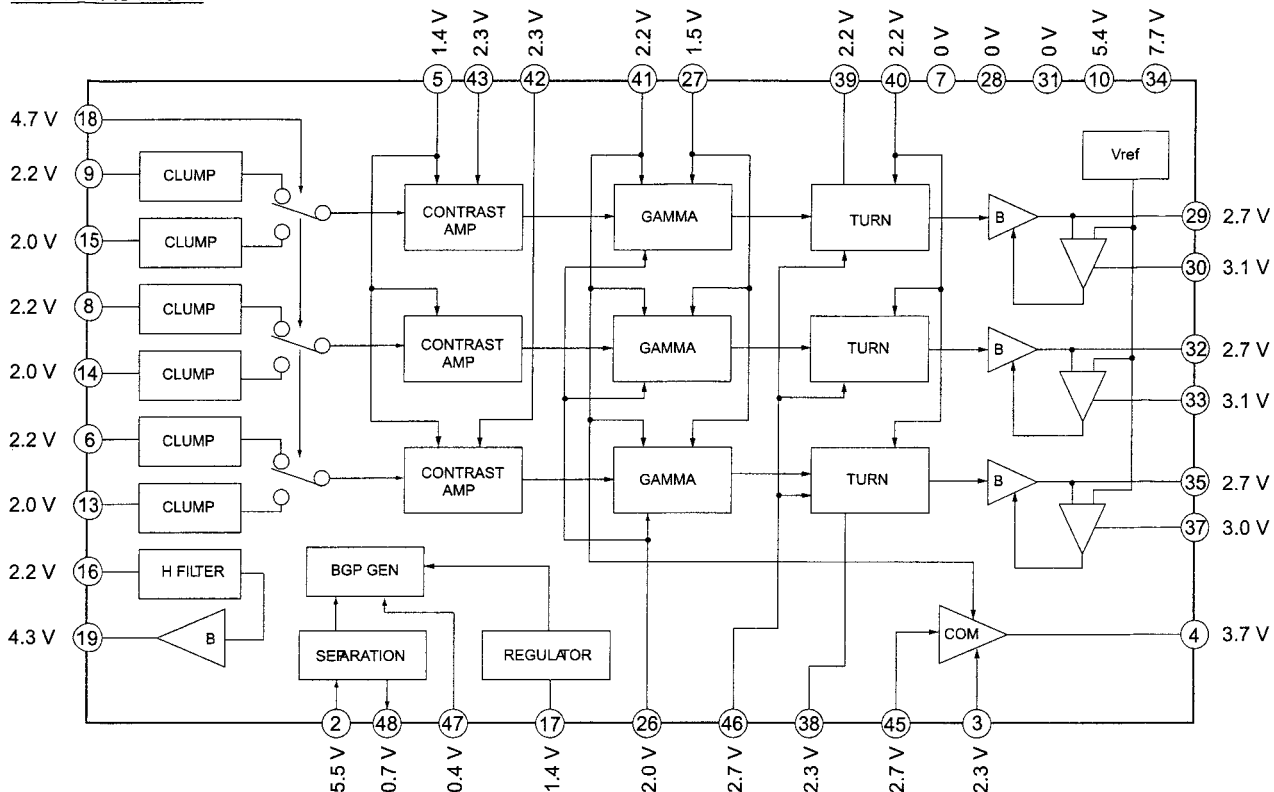
IC 12 - NJM4565M



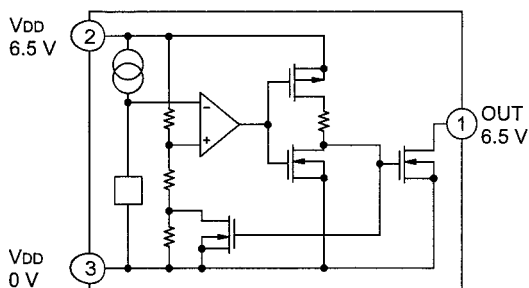
IC 13 - TC74VHC123A



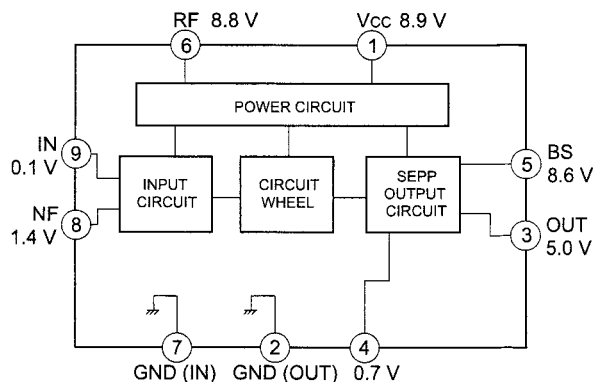
IC 14 - IR3Y26A1



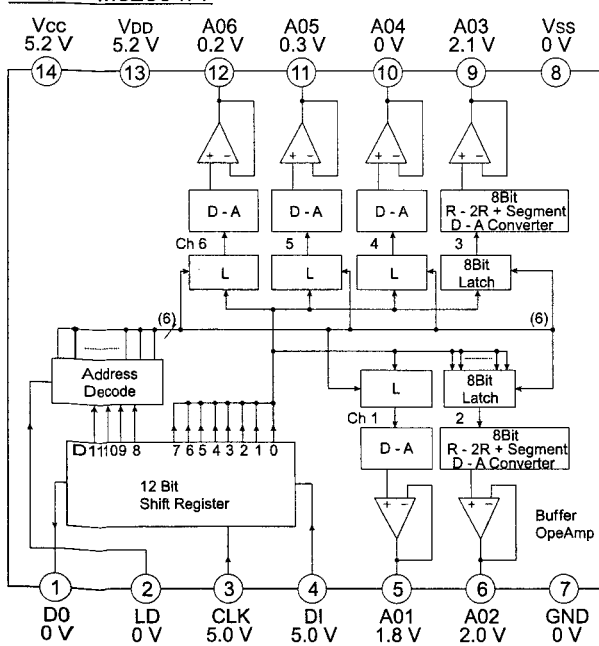
IC 15 - S-8054ALB



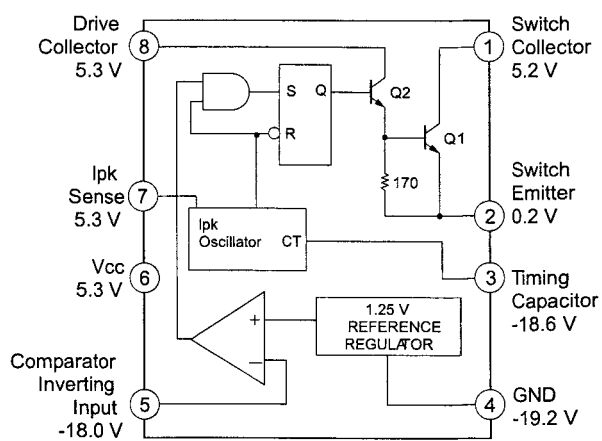
IC 20 - AN7141



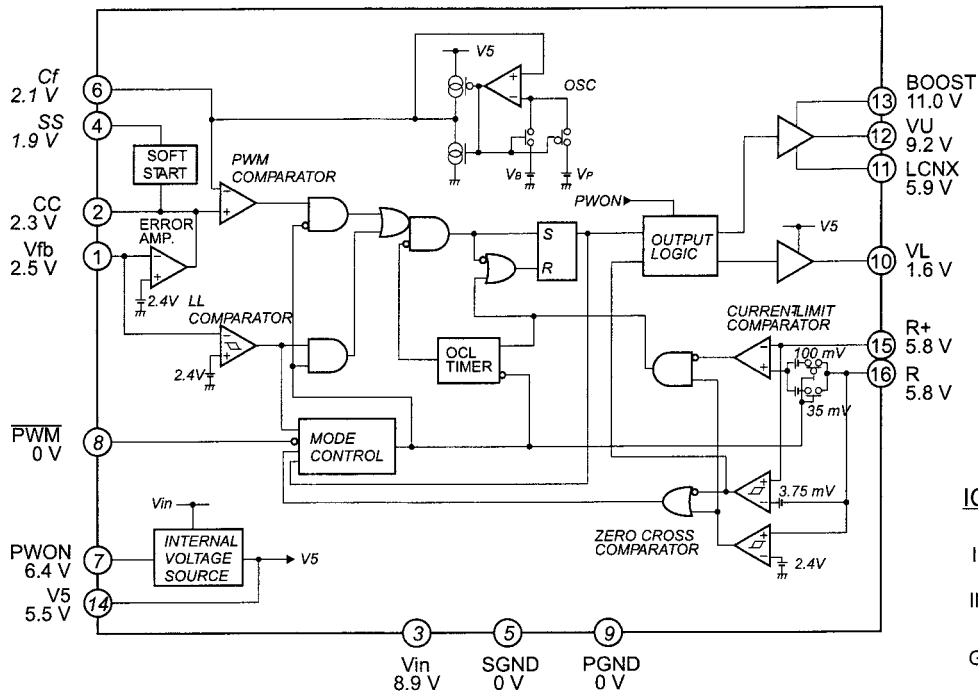
IC 21 - M62354FP



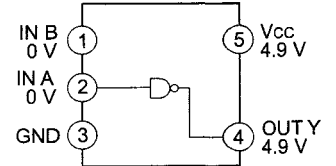
IC 22 - MC34063AM



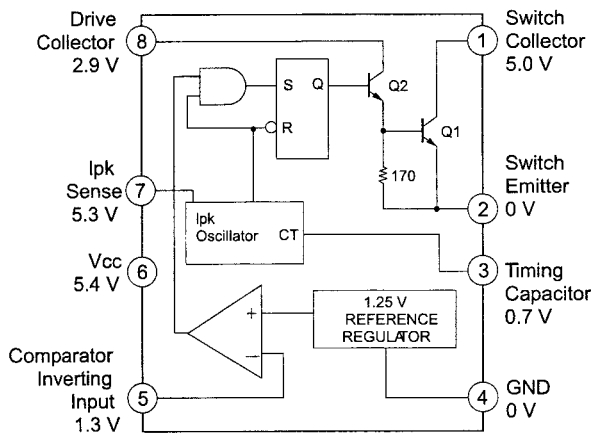
IC 24 - SB3012AP



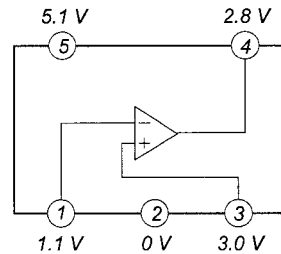
IC 27 - TC7S00FU



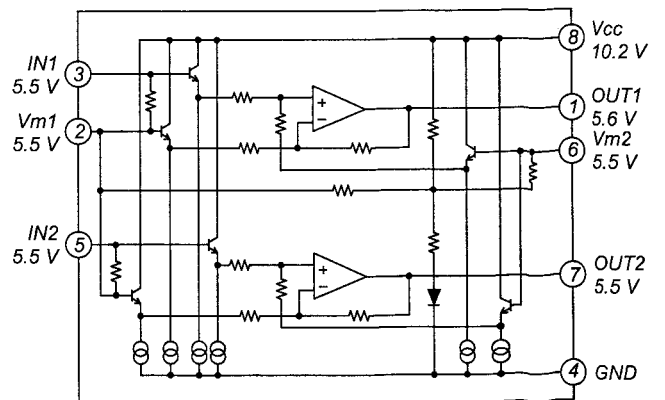
IC 28 - MC34063AM



IC 29 - TA75S393F

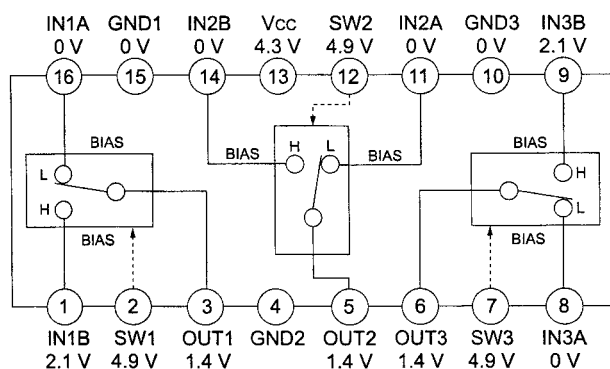


IC 30, IC 31 - BA3121F



IC 32 - NJM2229M: SEE NEXT PAGE

IC 33 - MM1231



IC 32 - NJM2229M

1: 0.0 V 9: 0.0 V
2: 2.2 V 10: 4.5 V
3: 2.4 V 11: 0.4 V
4: 0.0 V 12: 5.1 V
5: 4.5 V 13: 0.0 V
6: 2.6 V 14: 4.5 V
7: 1.9 V 15: 5.1 V
8: 0.0 V 16: 0.0 V

Q 05 - 2SA1622-6

B: 4.9 V
C: 4.0 V
E: 4.8 V

Q 10 - 2SA1252-D6

B: 0.5 V
C: 0.6 V
E: 1.2 V

Q 17 - 2SB1120-G

B: 12.4 V
C: 13.2 V
E: 13.2 V

Q 20 - TM3111

1: 5.9 V 5: 8.9 V
2: 5.9 V 6: 8.9 V
3: 5.9 V 7: 8.9 V
4: 9.5 V 8: 8.9 V

Q 23 - 2SD1819A-R

B: 0.6 V
C: 0.0 V
E: 0.0 V

Q 26 - 2SB709A-R

B: -18.2 V
C: -17.4 V
E: -19.2 V

Q 29 - 2SB709A-R

B: 4.1 V
C: (4.9 V)
E: 5.0 V

Q 01 - 2SD1819A-R

B: 2.6 V
C: 4.1 V
E: 2.0 V

Q 03 - 2SA1622-6

B: 1.7 V
C: 0.7 V
E: 2.3 V

Q 06 - 2SC2412K-R

B: 8.3 V
C: 13.7 V
E: 7.6 V

Q 11 - 2SD1802-T

B: 0.3 V
C: 5.4 V
E: 0.0 V

Q 18 - 2SD1819A-R

B: 0.7 V
C: 0.0 V
E: 0.0 V

Q 21 - TM3111

1: 0.0 V 5: 5.9 V
2: 0.0 V 6: 5.9 V
3: 0.0 V 7: 5.9 V
4: 1.6 V 8: 5.9 V

Q 24 - DTA143XU

B: 0.0 V
C: 5.0 V
E: 5.0 V

Q 27 - DTA143XU

B: 0.0 V
C: 5.1 V
E: 5.1 V

Q 30 - 2SD1819A-R

B: 0.7 V
C: 0.0 V
E: 0.0 V

Q 02 - 2SD1819A-R

B: 0.7 V
C: 0.0 V
E: 0.0 V

Q 04 - 2SA1622-6

B: 4.0 V
C: 0.0 V
E: 2.3 V

Q 09 - 2SD1819A-R

B: 0.7 V
C: 0.0 V
E: 0.0 V

Q 12 - 2SD1802-T

B: 0.2 V
C: 5.4 V
E: 0.0 V

Q 19 - DTC343TK

B: 0.0 V
C: 0.0 V
E: 0.0 V

Q 22 - 2SB1120-G

B: 5.4 V
C: 6.0 V
E: 6.0 V

Q 25 - DTA143XU

B: 5.0 V
C: 0.0 V
E: 5.0 V

Q 28 - DTC114YUA

B: 2.8 V
C: 0.0 V
E: 0.0 V

Note: Only those parts which have a (12nc) number are service parts. The other parts are mentioned for completeness purpose only!

Partslist

Only parts with service code number are available as spares.

PACKING PARTS

Inner carton
Pad, plain
Pad, plain
Poly cover, 220x250
Label, carton

CABINET PARTS

1	9965 000 00243	Assy, cabinet
2	9965 000 00244	Cabinet, bottom
3	9965 000 00245	Button
4	9965 000 00246	Bracket-M, set, A, cut
5	9965 000 00247	Bracket-M, set, B, in
SCR1	9965 000 00248	SCR 2x6 Bracket-M, set, A-B
SCR2	9965 000 00249	SCR S-TPG BIN 2x6 cabinet
SCR3		SCR S-TPG PAN 2.6x8 cabinet
SCR4		SCR S-TPG PAN 2.6x4
	9965 000 00250	Label, type
NTSC:	9965 000 00705	Label, type

CHASSIS PARTS MECHANICAL

11		Bracket-E, speaker
SCR5		SCR S-TPG PAN 2x5 speaker
		Sheet, LCD
		Sheet, LCD
SCR6		SCR S-TPG 2x5 sensor PCB
SCR7		SCR S-TPG PAN 2x5
12	9965 000 00251	Protector
SCR8	9965 000 00252	SCR PAN PCS 2x2
13	9965 000 00253	Cushion, button
14	9965 000 00254	Cushion, LCD side
16	9965 000 00255	Cushion, LCD rear
		Sheet, LCD
		Sheet, SP
15	9965 000 00256	Sheet, button

CHASSIS PARTS ELECTRICAL

19	9965 000 00257	Cord, 2P-130 mm, SP
20	9965 000 00258	Cord, welding, IR SENSOR
LCD1	9965 000 00242	Display module, LQ6BW506
SP1	9965 000 00261	Speaker, 8
FPC1	9965 000 00263	FPC

MAIN PWB ELECTRICAL

PCB1	9965 000 00264	Main PWB complete
NTSC:	9965 000 00706	Main PWB complete
C001		Elect 10 U M 16V
C002		Ceramic 1 U Z 16V
C003		Ceramic 1 U Z 16V
C004		Ceramic 1 U Z 16V
C005		Elect 10 U M 16V
C006		Ceramic 0.01 U K 50V
C007		Ceramic 0.1 U Z 16V
C008		Elect 100 U M 16V

C009	Ceramic	0.1 U Z 16V
C010	Elect	4.7 U M 25V
C011	Ceramic	0.01 U K 50V
C012	Elect	10 U M 16V
C013	Ceramic	10P D 50V
C014	Ceramic	10P D 50V
C015	Ceramic	27P J 50V
C016	Ceramic	47P J 50V
C017	Elect	100 U M 16V
C018	Elect	100 U M 16V
C019	OS-solid	22 U M 20V
C020	OS-solid	22 U M 20V
C021	Elect	22 U M 6.3V
C022	Elect	4.7 U M 25V
C023	Elect	100 U M 16V
C024	Ceramic	470P K 50V
C025	Elect	10 U M 16V
C026	Elect	1 U M 50V
C027	Ceramic	0.1 U Z 16V
C031	Ceramic	100P J 50V
NTSC:	Ceramic	180P J 50V
C032	Ceramic	0.1 U Z 16V
NTSC:	Ceramic	0.1 U K 50V
C033	Ceramic	470P K 50V
C037	Ceramic	0.01 U K 50V
C039	Elect	0.1 U M 50V
C040	Ceramic	2200P K 50V
C041	Elect	4.7 U M 25V
C042	Ceramic	0.01 U K 60V
C043	Elect	100 U M 16V
C045	Ceramic	1 U Z 16V
C046	Ceramic	1 U Z 16V
C047	Ceramic	1 U Z 16V
C048	Elect	10 U M 16V
C049	Elect	1 U M 50V
C050	Elect	10 U M 16V
C051	Ceramic	0.1 U Z 16V
C052	Ceramic	0.1 U Z 16V
C053	Ceramic	0.1 U Z 16V
C054	Ceramic	0.1 U Z 16V
C055	Ceramic	0.1 U Z 16V
C056	Ceramic	0.1 U Z 16V
C057	Elect	4.7 U M 25V
C058	Ceramic	5600P K 50V
C059	Ceramic	0.1 U Z 16V
C060	Ceramic	0.1 U Z 16V
C061	Ceramic	0.1 U Z 16V
C062	Ceramic	0.1 U Z 16V
C063	Ceramic	1 U Z 16V
C064	Ceramic	0.1 U Z 16V
C065	Ceramic	1 U Z 16V
C066	Elect	10 U M 16V
C067	Ceramic	1 U Z 16V
C068	Ceramic	0.1 U Z 16V
C069	Ceramic	0.1 U Z 16V
C070	Ceramic	0.1 U Z 16V
C071	Ceramic	0.1 U Z 16V
C072	Elect	100 U M 16V
C073	Elect	47 U M 10V
C074	Elect	100 U M 16V
C076	Elect	10 U M 16V

C081		Not present	C149		Ceramic	68P J 50V
NTSC:		Ceramic 1 U Z 10V	C150		Ceramic	0.01 U K 50V
C082		Not present	C151		Elect	10 U M 16V
NTSC:		Ceramic 1 U Z 10V	C152		Ceramic	0.01 U K 50V
C083		Not present	C153		Elect	33 U M 25V
NTSC:		Ceramic 1 U Z 10V	C154		Ceramic	0.01 U K 50V
C087		Elect 100 U M 16V	C160		Elect	100 U M 16V
C088		OS-solid 22 U M 20V	C162		Elect	100 U M 16V
C089		OS-solid 68 U M 20V	C163		Elect	330 U M 6.3V
C090		Elect 330 U M 16V	C165		Elect	100 U M 16V
C091		Elect 330 U M 16V	C166		OS-solid	150 U M 6.3V
C092		Ceramic 0.01 U K 50V	C167		Ceramic	1000P K 50V
C093		Pen-fil 0.22 U J 50V	C168		Ceramic	100P J 50V
C095		OS-solid 22 U M 20V	C169		Ceramic	0.047 U K 16V
C096		Elect 100 U M 16V	C170		Elect	330 U M 6.3V
C098		Ceramic 0.047 U K 16V	C174		Ceramic	0.01 U K 50V
C099		Elect 100 U M 16V	C175		Ceramic	0.1 U Z 16V
C101		Ceramic 4700P K 50V	C177		Ceramic	1 U Z 16V
C104		Elect 33 U M 25V	C178		Ceramic	0.01 U K 50V
C105		Ceramic 330P J 50V	C179		Ceramic	0.1 U Z 16V
C106		Elect 100 U M 16V	C180		Ceramic	5600P K 50V
C107		Ceramic 82P J 50V	C181		Ceramic	1 U Z 16V
C108		OS-solid 10 U M 16V	C182		Elect	1 U M 50V
NTSC:		Elect 100 U M 16V	C183		Ceramic	1 U Z 16V
C109		Elect 100 U M 16V	C184		Ceramic	0.1 U Z 16V
C110	9965 000 00265	Elect 2200 U M 25V	C185		Ceramic	1000P K 50V
NTSC:	9965 000 00265	Elect 3300 U M 16V	C187		Elect	4.7 U M 25V
C111		Elect 33 U M 25V	C188		Elect	4.7 U M 25V
C113		Ceramic 47P J 50V	C189		Elect	22 U M 10V
C114		Ceramic 0.1 U Z 16V	C190		Elect	1 U M 50V
C120		Elect 100 U M 16V	C191		Elect	100 U M 16V
C121		Elect 33 U M 25V	C193		Ceramic	1000P K 50V
NTSC:		Elect 100 U M 16V	NTSC:		Ceramic	1000P K 50V
C122		Elect 33 U M 25V	C194		Ceramic	1000P K 50V
NTSC:		Elect 100 U M 16V	NTSC:		Ceramic	1000P K 50V
C123		Ceramic 0.1 U Z 16V	C195		Elect	22 U M 16V
C124		Ceramic 0.047 U K 16V	C199		Elect	100 U M 16V
C125		Elect 100 U M 16V	C200		Elect	22 U M 10V
C126		Elect 100 U M 16V	NTSC:		Elect	22 U M 10V
C127		Elect 100 U M 16V	C201		Elect	1 U M 50V
C128		Ceramic 1 U Z 16V	C202		Elect	10 U M 16V
C129		Elect 22 U M 6.3V	C203		Ceramic	100P J 50V
C130		Elect 10 U M 16V	C204		Ceramic	0.01 U K 50V
C132		Ceramic 0.01 U K 50V	C205		Elect	4.7 U M 25V
NTSC:		Ceramic 4700P K 50V	C206		Ceramic	1000P K 50V
C133		Elect 10 U M 16V	NTSC:		Ceramic	1000P K 50V
C134		Ceramic 120P J 50V	C207		Elect	10 U M 16V
C135		Ceramic 0.01 U K 50V	C208		Ceramic	100P J 50V
C136		Ceramic 0.01 U K 50V	C209		Ceramic	0.1 U Z 16V
C137		Ceramic 1000P K 50V	C212		Ceramic	1000P K 50V
C138		Ceramic 120P J 50V	C217		OS-solid	10 U M 20V
C139		Ceramic 120P J 50V	C218		Not present	
C140		Elect 100 U M 16V	NTSC:		Elect	10 U M 16V
C141		Ceramic 1000P K 50V	C219		Ceramic	0.1 U Z 16V
NTSC:		Ceramic 1000P K 50V	C230		Ceramic	0.015 U K 50V
C142		Ceramic 1000P K 50V	CP1	9965 000 00266	Plug, 16P	
NTSC:		Ceramic 1000P K 50V	CP3	9965 000 00267	Socket, 4P (plug)	
C143		Ceramic 0.1 U Z 16V	CP4	9965 000 00259	Socket, 24P	
C144		Elect 100 U M 16V	CP6	9965 000 00260	Plug, 2P	
C145		Ceramic 1000P K 50V	CP7	9965 000 00276	Plug, 2P	
NTSC:		Ceramic 1000P K 50V	CT1	9965 000 00277	Trimmer, 30P	
C146		Ceramic 0.1 U Z 16V	NTSC:	9965 000 00707	Trimmer, 50P	
C147		Ceramic 120P J 50V	D01	9965 000 00278	D16DE SB05-05CP	
C148		Ceramic 1000P K 50V	D05	9965 000 00278	D16DE SB05-05CP	
NTSC:		Ceramic 1000P K 50V	D06	9965 000 00278	D16DE SB05-05CP	

D08	9965 000 00279	D16DE MA142K	Q11	9965 000 00313	TR 2SD1802-T
D09		DCA010	Q12	9965 000 00313	TR 2SD1802-T
NTSC:		Not present	Q17	9965 000 00314	TR 2SB1120-G
D10	4822 130 83023	D16DE SC802-04	Q18	9965 000 00310	TR 2SD1819A-R
D12	4822 130 82557	D16DE DCC010	Q19	9965 000 00315	TR DTC343TK
D14	4822 130 82557	D16DE DCC010	Q20	9965 000 00316	TR TM3111
D15	9965 000 00280	D16DE 1SS119-14	Q21	9965 000 00316	TR TM3111
NTSC:		Not present	Q22	9965 000 00314	TR 2SB1120-G
DZ01	9965 000 00281	Zener D16DE 02CZ5.6-X	Q23	9965 000 00310	TR 2SD1819A-R
DZ02	4822 130 83632	Zener D16DE DZD5.IY	Q24	9965 000 00317	TR DTA143X U
DZ03	9965 000 00282	Zener D16DE 02CZ8.2-Y	Q25	9965 000 00317	TR DTA143X U
DZ06	4822 130 83632	Zener D16DE DZD5.IY	Q26	9965 000 00318	TR 2SB709A-R
DZ07	4822 130 83632	Zener D16DE DZD5.IY	Q27	9965 000 00317	TR DTA143X U
DZ08	4822 130 83632	Zener D16 DE DZD5.IY	Q28	9965 000 00319	TR DTC114Y UA
DZ09	9965 000 00283	Zener D16 DE PTZ18B	Q29	9965 000 00318	TR 2SB709A-R
DZ10	9965 000 00283	Zener D16 DE PTZ18B	Q30	9965 000 00310	TR 2SD1819A-R
DZ12	4822 130 83632	Zener D16 DE DZD5.IY	R001		MT-glaze 10K JA 1/16W
F1	9965 000 00284	Fuse 125V 2.5A	R002		MT-glaze 15K JA 1/16W
IC01	4822 209 16794	IC LA6393M	R004		MT-glaze 2.2K JA 1/16W
IC02	9965 000 00285	IC TC4W53F U	R006		MT-glaze 10K JA 1/16W
IC03	9965 000 00286	IC S-80832AL UP-EAW-T2	R007		MT-glaze 15K JA 1/16W
IC04	9965 000 00287	IC X24C01S-2.7	R008		MT-glaze 15K JA 1/16W
IC05	9965 000 00288	OTP M37212EFPF	R009		MT-glaze 15K JA 1/16W
IC06	9965 000 00289	IC M62429FP	R012		MT-glaze 47K JA 1/16W
IC07	9965 000 00290	IC M52045FP	R013		MT-glaze 3.9K JA 1/16W
NTSC:	9965 000 00708	IC M52042FP-601C	R014		MT-glaze 2.2K JA 1/16W
IC08	9965 000 00291	IC MM1231XFBE	R015		MT-glaze 560 JA 1/10W
IC09	9965 000 00285	IC TC4W53F U	NTSC:		MT-glaze 2.2K JA 1/16W
IC10	9965 000 00292	IC TC7S00F U	R016		MT-glaze 12 JA 1/10W
IC12	9965 000 00293	IC NJM4565M-B	R017		MT-glaze 470K JA 1/16W
IC13	9965 000 00294	IC TC74VHC123AFT-(EL)	R018		MT-glaze 150K JA 1/16W
IC14	9965 000 00295	IC IR3Y26A1	R019		MT-glaze 560 JA 1/16W
IC15	9965 000 00296	IC S-8054ALB-LM	R020		MT-glaze 10K JA 1/16W
IC20	9965 000 00297	IC AN7141-(NT)	R021		MT-glaze 5.6K JA 1/16W
IC21	9965 000 00298	IC M62354FP	R022		MT-glaze 10K JA 1/16W
IC22	9965 000 00299	IC MC34063AM	R023		MT-glaze 10 JA 1/16W
IC24	9965 000 00300	IC SB3012AP	R024		MT-glaze 680 JA 1/16W
IC27	9965 000 00292	IC TC7S00F U	R025		MT-glaze 39 JA 1/10W
IC28	9965 000 00299	IC MC34063AM	R026		MT-glaze 33 JA 1/16W
IC29	9965 000 00301	IC TA75S393F	R027		MT-glaze 470 JA 1/16W
IC30	9965 000 00302	IC BA3121F	R029		MT-glaze 820 JA 1/16W
IC31	9965 000 00302	IC BA3121F	NTSC:		MT-glaze 2.7K JA 1/16W
IC32	9965 000 00303	IC NJM2229M	R030		MT-glaze 0.000 ZA 1/16W
IC33	9965 000 00291	IC MM1231XFBE	R032		MT-glaze 15K JA 1/16W
JK1	9965 000 00304	Jack	R033		MT-glaze 10K JA 1/16W
L01	9965 000 00305	Inductor 33 UH K	R035		MT-glaze 10 JA 1/10W
L02	9965 000 00306	Inductor 100 UH K	R036		MT-glaze 1K JA 1/16W
L06	9965 000 00307	Inductor 270 UH N	R037		MT-glaze 10K JA 1/16W
L07	9965 000 00307	Inductor 270 UH N	R038		MT-glaze 1K JA 1/16W
L08	9965 000 00307	Inductor 270 UH N	R039		MT-glaze 5.6K JA 1/16W
L09	9965 000 00308	Inductor 22 UH M	R040		MT-glaze 1K JA 1/16W
L10	9965 000 00307	Inductor 270 UH N	R041		MT-glaze 100 JA 1/10W
L11	9965 000 00309	Inductor, ferrite	R042		MT-glaze 47K JA 1/16W
L12	9965 000 00309	Inductor, ferrite	R043		MT-glaze 15K JA 1/16W
L14	9965 000 00309	Inductor, ferrite	R044		MT-glaze 10K JA 1/16W
L15	9965 000 00308	Inductor 22 UH M	R045		MT-glaze 10K JA 1/16W
L16	9965 000 00307	Inductor 270 UH N	R046		MT-glaze 15K JA 1/16W
Q01	9965 000 00310	TR 2SD1819A-R	R047		MT-glaze 47K JA 1/16W
Q02	9965 000 00310	TR 2SD1819A-R	R048		MT-glaze 47K JA 1/16W
Q03	4822 130 11358	TR 2SA1622-6	R049		MT-glaze 2.2K JA 1/16W
Q04	4822 130 11358	TR 2SA1622-6	R050		MT-glaze 2.2K JA 1/16W
Q05	4822 130 11358	TR 2SA1622-6	R051		MT-glaze 15K JA 1/16W
Q06	9965 000 00311	TR 2SC2412K-R	R052		MT-glaze 15K JA 1/16W
Q09	9965 000 00310	TR 2SD1819A-R	R053		MT-glaze 0.000 ZA 1/16W
Q10	9965 000 00312	TR 2SA1252-D6	R054		MT-glaze 10K JA 1/16W

R055 MT-glaze 4.7K JA 1/16W
R056 MT-glaze 1K JA 1/16W
R057 MT-glaze 100 JA 1/16W
R058 MT-glaze 100 JA 1/16W
R059 MT-glaze 100 JA 1/16W
R060 MT-glaze 47K JA 1/16W
R061 MT-glaze 15K JA 1/16W
R062 MT-glaze 47K JA 1/16W
R063 MT-glaze 15K JA 1/16W
R064 MT-glaze 47K JA 1/16W
R065 MT-glaze 15K JA 1/16W
R066 MT-glaze 47K JA 1/16W

R067 MT-glaze 15K JA 1/16W
R068 MT-glaze 47K JA 1/16W
R069 MT-glaze 15K JA 1/16W
R070 MT-glaze 47K JA 1/16W
R071 MT-glaze 15K JA 1/16W
R072 MT-glaze 12K JA 1/16W
R073 MT-glaze 39 JA 1/10W
R074 MT-glaze 15K JA 1/16W
R075 MT-glaze 47K JA 1/16W
R076 MT-glaze 15K JA 1/16W

R077 MT-glaze 47K JA 1/16W
R078 MT-glaze 100 JA 1/16W
R079 MT-glaze 00K JA 1/16W
R080 MT-glaze 100K JA 1/16W
R081 MT-glaze 100K JA 1/16W
R082 MT-glaze 100K JA 1/16W
R083 MT-glaze 1K JA 1/10W
R084 MT-glaze 470 JA 1/16W
R085 MT-glaze 100 JA 1/16W
R086 MT-glaze 100 JA 1/16W

R087 MT-glaze 100 JA 1/16W
R088 MT-glaze 47K JA 1/16W
R089 MT-glaze 47K JA 1/16W
R090 MT-glaze 47K JA 1/16W
R095 MT-glaze 1.5K JA 1/16W
R096 MT-glaze 470 JA 1/10W
R097 MT-glaze 3.3K JA 1/16W
R098 MT-glaze 470 JA 1/10W
R102 MT-glaze 100K JA 1/16W
R104 MT-glaze 470K JA 1/16W

R106 MT-glaze 47K JA 1/16W
R107 MT-glaze 1K JA 1/10W
R108 MT-glaze 10K JA 1/16W
R109 MT-glaze 0.022 JA IW
NTSC: MT-glaze 0.043 JA IW
R110 MT-glaze 75 JA 1/16W
R111 MT-glaze 2.7M JA 1/16W
R112 MT-glaze 180 JA 1/16W
R117 MT-glaze 100 JA 1/16W
R121 MT-glaze 100K JA 1/16W

R122 MT-glaze 470 JA 1/2W
R124 MT-glaze 2.2 JA 1/10W
R125 MT-glaze 5.6K JA 1/16W
R126 MT-glaze 0.000 ZA 1/16W
R127 MT-glaze 1.5K JA 1/16W
R128 MT-glaze 1K JA 1/16W
R129 MT-glaze 100K JA 1/16W
R131 MT-glaze 1K JA 1/16W
R132 MT-glaze 100 JA 1/16W
R133 MT-glaze 100 JA 1/16W

R134 MT-glaze 0.000 ZA 1/16W
R135 MT-glaze 0.000 ZA 1/16W
R136 MT-glaze 0.000 ZA 1/16W

R137
R140
R141
R142
R144
R145
R150
R151
R153
R154
R155
R156

R157
R158
R159
R165
NTSC:
R166
NTSC:
R167
NTSC:
R168

NTSC:
R169
NTSC:
R170
R171
R173
R174
R176
R177
R178

R179
R180
R181
R182
R183
R185
R186
R189
R190
NTSC:

R191
NTSC:
R198
R199
R200
R201
R202
R203
R204
R205

R206
R207
R209
R210
R211
R212
R214
R217
R218
R221

R222
R223
R224

MT-glaze 0.33 JA IW
MT-glaze 10K JA 1/16W
MT-glaze 75 JA 1/16W
MT-glaze 0.000 ZA 1/16W
MT-glaze 39 JA 1/10W
MT-glaze 10 JA 1/10W
MT-glaze 0.000 ZA 1/16W
MT-glaze 0.000 ZA 1/16W
MT-glaze 2.2K JA 1/16W
MT-glaze 560 JA 1/10W
MT-glaze 12 JA 1/10W
MT-glaze 12 JA 1/10W

MT-glaze 2.7K JA 1/16W
MT-glaze 2.7K JA 1/16W
MT-glaze 10K JA 1/16W
MT-glaze 0.33 JA 1W
MT-glaze 5.6 JA 1W
MT-glaze 0.000 ZA 1/16W
Not present
MT-glaze 27K JA 1/16W
Not present
MT-glaze 18K JA 1/16W

Not present
Not present
MT-glaze 0.000 ZA 1/16W
MT-glaze 75 JA 1/16W
MT-glaze 270 JA 1/16W
MT-glaze 0.33 JA IW
MT-glaze 1K JA 1/16W
MT-glaze 100K JA 1/16W
MT-glaze 470 JA 1/8W
MT-glaze 10 JA 1/16W

MT-glaze 100K JA 1/16W
MT-glaze 3.9K JA 1/16W
MT-glaze 47K JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100K JA 1/16W
Not present
MT-glaze 27K JA 1/16W

Not present
MT-glaze 27K JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 100 JA 1/16W
MT-glaze 12 JA 1/10W
MT-glaze 1.8K JA 1/16W
MT-glaze 4.7K JA 1/16W
MT-glaze 10K JA 1/16W
MT-glaze 3.3K JA 1/16W

MT-glaze 1M JA 1/16W
MT-glaze 47K JA 1/16W
MT-glaze 150K JA 1/16W
MT-glaze 10K JA 1/16W
MT-glaze 10K JA 1/16W
MT-glaze 22K JA 1/10W
MT-glaze 10 JA 1/10W
MT-glaze 2.2K JA 1/16W
MT-glaze 2.2K JA 1/16W
MT-glaze 100K JA 1/16W

MT-glaze 100K JA 1/16W
MT-glaze 4.7K JA 1/16W
MT-glaze 4.7K JA 1/16W

R225		MT-glaze 10K JA 1/16W
R226		MT-glaze 15 JA 1/10W
R227		MT-glaze 10K JA 1/16W
R228		MT-glaze 10K JA 1/16W
R229		MT-glaze 470 JA 1/10W
R230		MT-glaze 10K JA 1/16W
R231		MT-glaze 100K JA 1/16W
R232		MT-glaze 33K JA 1/16W
R233		MT-glaze 10K JA 1/16W
R234		MT-glaze 680K JA 1/16W
R235		MT-glaze 82 JA 1/10W
R237		MT-glaze 1K JA 1/16W
R238		MT-glaze 100K JA 1/16W
R239		MT-glaze 100K JA 1/16W
S1	9965 000 00320	Switch, tact, 1P-1T
S2	9965 000 00320	Switch, tact, 1P-1T
S3	9965 000 00320	Switch, tact, 1P-1T
SVR01	9965 000 00321	Potentiometer, 33K
SVR02	9965 000 00321	Potentiometer, 33K
SVR03	9965 000 00321	Potentiometer, 33K
SVR04	9965 000 00321	Potentiometer, 33K
SVR05	9965 000 00321	Potentiometer, SSK
SVR06	9965 000 00321	Potentiometer, 33K
SVR07	9965 000 00321	Potentiometer, 33K
SVR08	9965 000 00321	Potentiometer, 33K
SVR09	9965 000 00321	Potentiometer, 33K
SVR10	9965 000 00321	Potentiometer, 33K
SVR11	9965 000 00321	Potentiometer, 33K
T1	9965 000 00333	Inverter trans
T2	4822 157 11124	Inductor, SK, 5.00MH
TH101	9965 000 00334	TH
		NTCCS20123BH102KCTH1
X2	9965 000 00335	Resonator, XTAL, 8.000MHz
X4	9965 000 00342	Resonator, XTAL,
		4.433619 MHz
NTSC:	9965 000 00709	Resonator, XTAL,
		3.579545 MHz

MAIN PWB OTHERS

Bracket-E, Socket
Sheet
Protector

SENSOR PWB

PCB2	9965 000 00348	Sensor PWB complete
C280		Ceramic 0.1 U Z 16V
C284		Elect 100 U M 16V
CP5	9965 000 00267	Socket, 4P(plug)
IC201	9965 000 00349	IC TC75S51F
P201	9965 000 00350	Photo diode TPS703
P202	9965 000 00343	Sensor SBX8035D
Q201	9965 000 00319	TR DTC114 Y UA
Q202	9965 000 00319	TR DTC114Y UA
R280		MT-glaze 820K JA 1/16W
R283		MT-glaze 10 JA 1/10W
R285		MT-glaze 10 JA 1/10W
R286		MT-glaze 4.7K JA 1/16W